PHILIP MORRIS U. S. A.

INTER-OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Mr. J. E. Wickham Date: March 23, 1987

From: . Deborah R. Watson

Subject: . Special Circumference Study

A study investigating circumference changes of cigarette rods has shown that Marlboro 80 Box cigarettes increase in circumference within twenty-four hours after being manufactured. These cigarettes that showed growth activity were taken from packs. Loose cigarettes taken directly from the cigarette maker showed no growth. This difference was also seen in a study done by Q.A.[1] This growth in circumference was not observed in either the loose or pack samples for any other brands tested during this study.

The averaged data for the first four months of this study have been collected, and the results are given in Tables I-X. The initial data indicates that Marlboro 80 Box pack samples showed an increase in circumference (.28 mm) within the first twenty-four hours (Table I). These values are noted parenthetically in Table I. As can be seen in this table, changes in circumference were observed several hours later when the cigarettes were tested in CTSD's Physical Testing Lab on the same day cigarettes were manufactured. The loose samples of Marlboro 80 Box cigarettes did not change (Table II). The difference between pack and loose Marlboro 80 Box cigarette samples may be attributed to the large circumference and moisture kept by the pack. The Benson & Hedges DeLuxe Ultra Lights Menthol 100's pack and loose samples showed no increase in circumference (Table III and IV, respectively), and this may be due to the smaller circumference. Because of a mixed sampling of Cambridge 100's pack samples, this data could not be used. However, Cambridge 100's loose samples showed no change in circumference (Table V).

Tables VI-X contain the averaged data for conditioned environments. Table VI shows that Marlboro 80 Box pack samples are unstable in the cold storage and jungle conditions. The Marlboro 80 Box pack samples in the desert conditions appear to be on a shrinking trend except for the last testing period. These samples were stable in ambient conditions. Table VII shows that Marlboro 80 Box loose samples are stable in ambient cold storage, and desert conditions. The loose samples in the jungle room appear to be growing. This could possibly be due to the moisture level of this environment. Benson & Hedges DeLuxe Ultra Lights Menthol 100's pack samples are stable in ambient, cold storage, and desert conditions (Table VIII). These pack samples are increasing in circumference in the jungle room. Again, possibly due to moisture. Benson & Hedges DeLuxe Ultra Lights Menthol 100's loose samples are stable in ambient and cold storage

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conditions (Table IX), and shows increases in circumference in desert and jungle conditions. Table X shows that Cambridge 100's loose samples are stable in ambient, cold storage and desert conditions, and shows an increase in circumference in jungle conditions.

Enough cigarettes were obtained from makers and packers to accommodate a year long study involving four different conditioned environments. During each testing period both loose and pack samples were taken from each condition and were tested. Both loose and pack samples were collected for Marlboro 80 Box and Benson & Hedges DeLuxe Ultra Lights Menthol 100's at the Manufacturing Center. Loose and pack samples for Cambridge 100's were obtained from Stockton Street. However, it was discovered that a mixed sample was collected for the Cambridge 100's pack samples. At Stockton Street, cigarettes were manually put in trays and taken to packers. Cigarettes from makers 69 and 100 were packed by the same packer and therefore, resulted in a mixed circumference sampling. Cigarettes from both pack and loose samples were tested at the place of manufacture, and retested in CTSD's Physical Testing Laboratory. A new sampling of both loose and packed cigarettes for each brand was also tested initially by the Physical Testing Laboratory. These cigarettes were then retested at the twenty-four, forty-eight, and ninety-six hour mark. During this time, these cigarettes were kept in a conditioned environment of 75°F, 60% R.H. Testing began on cigarettes from the ambient, cold storage, desert and jungle conditions at the forty-eight hour mark.

Since a change was noted in the Marlboro 80 Box pack samples, I recommend the following: (1) that Marlboro 80 Box loose and pack samples be collected on several occasions, tested at the Manufacturing Center, retested in the CTSD's Physical Testing Laboratory, with new samples tested initially in the Physical Testing and again twenty-four hours later. (2) I also suggest we pick up Players 85 Box which has the same circumference as the Marlboro 80 Box, to see if larger circumference cigarettes grow. I would also like to collect Benson & Hedges DeLuxe Ultra Lights 100's instead of the menthol, to see if this brand behaves differently. It may be difficult to collect the Players and B & H at the same time however, as they are produced when inventory is low. (3) In addition, I do not feel it is necessary to continue testing those samples that have stabilized in the ambient, cold storage, desert and jungle conditions. Therefore, I also recommend that we continue testing the following brands in the conditions where they are not considered to be stable until such time that they are:

Marlboro 80 Box pack samples in cold storage and jungle conditions

Benson & Hedges DeLuxe Ultra Lights Menthol 100's loose samples in desert conditions.

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There remains two more testing periods in this study (six months and twelve months).

[1]Memo to E. L. Watts from P. F. Werkmeister entitled "Results of Comparing Circumference in Pack vs. Loose Cigarettes from the Maker," dated March 19, 1984.

DRW:rad

Deborah R. Watson

cc: Ms. H. Gray
Ms. B. Kanipe
Ms. K. Sanderson
Ms. J. Stargardt
Central File

Attachments

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